

REMARKS

This amendment responds to the Office Action mailed February 8, 2006. In the Office Action, Claims 1 and 6 were rejected under 35 U.S.C. 102(b) as being anticipated by Frett (US 5,305,464). Claims 8 and 27-34 were rejected as being anticipated by Williams et al (US 6,469,634). Claims 3 and 4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Frett in view of Zinzell (US 6,097,302). Claims 9, 10, 13, 14, 17 and 19 were rejected as unpatentable over Williams in view of Zinzell. Official Notice was used in combination with the cited art to reject Claims 12 and 21. Lastly, Claims 11 and 20 were rejected at being unpatentable over Williams and Zinzell in view of Armstrong.

Claims 1, 6, 8, 14, 27, 28, and 29 have been amended, and new Claim 35 (dependent on Claim 14) has been added. Claims 1, 3, 4, 6, 8-17, 19-21, and 27-35 are pending in the present application.

Applicants respectfully request reconsideration and allowance of the application. Neither Frett nor Williams, alone or combined, teach or suggest all of the elements recited in independent Claims 1, 6, 8, 14, and 27-30, and neither the Official Notice taken by the Examiner nor the secondary reference to Armstrong overcomes the deficiency of disclosure in Frett and Williams. For the reasons discussed below, all pending claims should be allowed.

Prior to discussing the Office Action and the cited art, applicants provide the following overview of an embodiment described in the present application, after which applicants discuss in detail the reasons why the pending claims are patentable. The following overview is provided for purposes of illustration only. The overview is not intended to define the claims nor be exhaustive in describing all the patentable features of the present invention.

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Overview

Figure 10 of the present application illustrates an embodiment described in the present application. As explained on page 24 of the application as filed:

FIG. 10 is a flowchart showing another embodiment of a method 700 for determining the channel state of set top box 130. Method 700 typically runs continuously to measure the STB channel state. The output values of light-sensing elements are detected (710) where the light sensing elements detect the state of light emitting devices on a set top box display. Based on the detected states, a feedback signal is then generated (712). The channel state is determined based on the feedback signal. In one embodiment, a character recognition engine 602 is used to make the determination (720). The measured channel state is then compared (730) with the channel state desired by the companion box device. In one embodiment, the comparison (730) is performed by the channel state analysis engine 604. If the measured channel state matches the desired channel state, then the method 700 ends. If there is no match, then a command may be sent (740) from the companion box device to the set top box to change the set top box channel to the desired channel state. In one embodiment, a response engine 606 may command an IR transmitter 241 to send the change channel command to the IR receiver 200 of STB 130. The method 700 then ends.

Claims 1 and 3-4 Are Patentable Over Frett and Zinzell

Turning now to the Office Action, applicants have carefully considered the cited references and the discussion in the Office Action. Applicants respectfully request withdrawal of the claim rejections.

For the convenience of the Examiner, amended Claim 1 is repeated as follows:

1. An apparatus for determining a channel state of a set top box, the apparatus comprising:

a sensing stage capable to detect light intensity from various positions on a display and generating output signals based on light intensity detected from each of the various positions;

a comparison stage communicatively coupled to the sensing stage and capable to generate digital values by comparison of each generated output signals with a threshold value;

an interface communicatively coupled to the comparison stage and capable to generate a feedback signal based upon the digital values to indicate a channel state of the set top box; and

an output capable to transmit the feedback signal to a companion box device for processing, wherein the companion box device is configured to detect the channel state of the set top box and based on the channel state, to automatically send a command to the set top box to change the channel of the set top box to a predetermined desired channel.

As noted above, Claim 1 is directed to an apparatus for determining a channel state of a set top box. In addition to a “sensing stage,” a “comparison stage,” and an “interface...capable to generate a feedback signal,” the apparatus includes “an output capable to transmit the feedback signal to a companion box device for processing, wherein the companion box device is

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configured to detect the channel state of the set top box and based on the channel state, to automatically send a command to the set top box to change the channel of the set top box to a predetermined desired channel.”

Applicants submit that Frett does not teach or suggest the features of Claim 1. Frett does not provide any disclosure regarding a predetermined desired channel, nor does Frett discuss any capacity of a companion box device to send a command to a set top box to change the channel of the set top box to the desired channel. According to Frett, detected channels may be recorded and later supplied to a central computer (as purportedly may be used by the stated assignee, A.C. Nielsen Company, to measure TV programming popularity), but it does not disclose automatically changing the channel of the set top box according to a predetermined desired channel.

As the disclosure in Frett does not anticipate all of the elements of Claim 1, applicants submit that Claim 1 is in condition for allowance.

Claims 3 and 4 are also patentable over Frett for their dependence on Claim 1 and for the additional subject matter they recite, notwithstanding the disclosure of Zinzell, which does not cure the above-noted deficiency of disclosure in Frett. Allowance of Claims 3 and 4 is also requested.

Claim 6 Is Patentable Over Frett

For the convenience of the Examiner, amended Claim 6 is repeated as follows:

6. A method of determining a channel state of a set top box,
the method comprising:
detecting states of light emitting devices in a display of a set top
box;
generating an analog value based on each detected state;

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comparing each analog value with a threshold value and generating a digital value for each compared analog value;

transmitting to a companion box device a bit stream having the generated digital values to permit the companion box device to determine a channel state of the set top box; and

receiving a signal from the companion box device that causes the set top box to change the channel to a predetermined desired channel if the channel state of the set top box indicates that the set top box is not currently tuned to the desired channel.

As noted above, Claim 6 is directed to method of determining a channel state of a set top box. Applicants submit that Frett does not disclose all of the elements recited in Claim 6. In addition to “transmitting to a companion box a bit stream [used]...to determine a channel state of the set top box,” the method includes “receiving a signal from the companion box device that causes the set top box to change the channel to a predetermined desired channel if the channel state of the set top box indicates that the set top box is not currently tuned to the desired channel.” Frett provides no disclosure regarding a predetermined desired channel, nor causing the set top box to change the channel if the channel state indicates that the set top box is not currently tuned to the desired channel. Frett merely teaches a mechanism for recording detected channels and in some cases, reporting the detected channels to a central computer.

Since the disclosure in Frett does not anticipate the elements of Claim 6, applicants request reconsideration and allowance of Claim 6.

Claims 8-13 Are Patentable Over Williams, Zinzell, Armstrong and Official Notice

Amended Claim 8 recites as follows:

8. A set top box channel state system, comprising:

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a device including a plurality of light-sensing elements communicatively coupled to a display of a set top box, the display including a plurality of light emitting devices; and

a companion box device communicatively coupled to the light-sensing elements, the companion box device including

an infrared blaster capable to use a code set to send commands via an IR beam to the set top box,

a character recognition engine capable to determine set top box channel state as displayed on the display based on the output of the light-sensing elements,

a channel state analysis engine communicatively coupled to the character recognition engine and capable to determine if the channel state matches a desired channel state, and

a response engine communicatively coupled to the analysis engine and the IR blaster and capable to command the IR blaster, without changing the code set, to send a change channel command via an IR beam to the set top box if the channel state does not match the desired channel state.

Applicants submit that the claimed set top box channel state system is not anticipated by Williams. Williams describes a system that is used to identify communication codes employed by a device, such as a set top box. As described at col. 7, line 56 to col. 8, line 64 of Williams, the system uses “code selection logic” to control a process for identifying codes used to control electronic devices. A “feedback analysis module” is allegedly used to determine if the electronic device responded, as expected, to a code signal communicated to the device. If so, the system

determines that the selected code uniquely identifies the device and no further checking is necessary (see col. 7, lines 59-62). If the code signal does not activate the function as expected, the system selects a different code to try and sends a new code signal to the electronic device (see col. 7, lines 33-38).

The disclosure in Williams does not anticipate the elements of Claim 8. Claim 8 recites, in part, “an infrared blaster capable to use a code set to send commands via an IR beam to the set top box,” “a channel state analysis engine communicatively coupled to the character recognition engine and capable to determine if the channel state matches a desired channel state,” and “a response engine communicatively coupled to the analysis engine and the IR blaster and capable to command the IR blaster, without changing the code set, to send a change channel command via an IR beam to the set top box if the channel state does not match the desired channel state.” At a minimum, these elements are not taught by Williams. Reconsideration and allowance of Claim 8 is requested.

Claims 9-13 are also patentable over the cited art for their dependence on Claim 8 and for the additional subject matter they recite. The disclosures of Zinzell, Armstrong, and Official Notice (taken by the Examiner with respect to Claim 12) do not overcome the deficiency of disclosure in Williams. Allowance of Claims 9-13 is requested.

Claims 14-17, 19-21, and 35 Are Patentable Over Williams, Zinzell, Armstrong and Official Notice

Amended Claim 14 is repeated as follows:

14. A method of detecting a channel state of a set top box, the method comprising:
sampling output from a plurality of light-sensing elements coupled to a display of a set top box;

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determining a channel state of the display based on the output;
comparing the determined channel state with a desired channel
state; and

if the determined channel state does not match the desired channel
state, sending a change channel command to the set top box to cause the
set top box to change to the desired channel state, without changing codes
used to configure the change channel command.

Applicants submit that the method recited in Claim 14 is not obvious in view of Williams and Zinzell. The Office Action rejected Claim 14 using the analysis applied to Claim 9, but as discussed above, the cited art does not anticipate or render obvious Claim 9, nor Claim 8 on which Claim 9 is based. More specifically, the cited art does not teach or suggest “comparing the determined channel state with a desired channel state” and “if the determined channel state does not match the desired channel state, sending a change channel command to the set top box to cause the set top box to change to the desired channel state, without changing codes used to configure the change channel command.” For reasons similar to those discussed above with respect to Claim 8, Claim 14 is believed to be patentable over the cited art.

Claims 15-17, 19-21 and 35 are also patentable over the cited art for their dependence on allowable Claim 14 and for the additional subject matter they recite. New Claim 35, in particular, recites the method of Claim 14, “wherein the method is repeated to continuously determine the channel state of the STB and ensure it matches the desired channel state.” (See e.g., the discussion of Figure 10 of the present application provided herein). At best, Williams compares the response, if any, of an electronic device to a code signal, and if the device responds as expected, then no further checking of future responses is necessary. (See col. 7, lines 5-11 and 52-62). Allowance of Claims 15-17, 19-21 and 35 is requested.

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Claims 27-34 Are Patentable Over Williams

Lastly, for convenience, Claims 27-29 (amended) and Claim 30 (not amended) are repeated as follows:

27. A companion box configured to communicate with a set top box via an infrared (IR) blaster to affect a channel state of the set top box, the companion box comprising:

an IR blaster capable to use a set of codes to send a command via an IR beam to the set top box; and

a channel state recognition circuit in communication with the IR blaster, the channel state recognition circuit including a processor and a plurality of light-sensing elements positioned relative to light emitting devices on a display of the set top box, the light emitting devices indicating the channel state of the set top box, the processor being coupled to the plurality of light sensing elements to receive one or more signals therefrom and determine the channel state of the set top box, wherein the processor is configured to send a command via the IR blaster using the set of codes to change the channel state of the set top box to a particular channel state and wherein after sending the command, the processor is further configured to receive one or more signals from the light sensing elements and determine the channel state of the set top box, and if the channel state of the set top box does not match the particular channel state, the processor is configured to send the command via the IR blaster to change the channel state to the particular channel state, without changing the set of codes used to send the command.

28. A companion box configured for communication with a set top box via an infrared (IR) blaster, the set top box having an output with channels over which programming content is communicated, the companion box comprising:

an IR blaster capable to use a set of codes to send a command via an IR beam to the set top box;

a feedback interface configured to produce a feedback signal indicative of a channel state of the set top box; and

a processor coupled to the feedback interface and the IR blaster, wherein after the IR blaster sends a command to the set top box to change the channel state to a desired channel state, the processor is configured to receive the feedback signal from the feedback interface, and if the channel state does not match the desired channel state, the processor is further configured to cause the IR blaster to send the command to change the channel state to the desired channel state, without changing the set of codes used to send the command.

29. A method of ensuring execution of a command received by a set top box from an infrared (IR) blaster, wherein the command is configured according to one or more codes, comprising:

sending a command from an IR blaster to a set top box;

externally monitoring a display of the set top box to determine if the command has been executed, the display being formed of one or more

light emitting devices and the monitoring of the display being achieved through positioning one or more light sensors relative to the light emitting devices, the light sensors producing one or more feedback signals indicative of the light emitting state of the light emitting devices; and

determining from the one or more feedback signals whether the command from the IR blaster was executed by the set top box, and if the command was not executed by the set top box, then resending the command from the IR blaster without changing the one or more codes used to configure the command.

30. A method of maintaining a channel state of a set top box, comprising:

detecting the channel state of a set top box based on a display of the channel state on the set top box;

generating signal information indicative of the detected channel state;

transmitting the generated signal information to a companion box for the companion box to determine an initial channel state of the set top box;

repeating the steps of detecting the channel state of the set top box, generating the signal information indicative of the channel state, and transmitting the generated signal information to the companion box to determine a current channel state of the set top box;

comparing the current channel state to the initial channel state; and

sending a command to the set top box to change to the initial channel state if the current channel state is determined to be different than the initial channel state.

The Office Action rejected Claims 27-30, without any specific comments, based on the application of Williams to Claim 8. Applicants respectfully disagree.

With respect to Claim 27, Williams at least does not disclose “an IR blaster capable to use a set of codes to send a command via an IR beam to the set top box” and “a channel state recognition circuit...including a processor...configured to send a command via the IR blaster using the set of codes to change the channel state of the set top box to a particular channel state and wherein after sending the command, the processor is further configured to...determine the channel state of the set top box, and if the channel state of the set top box does not match the particular channel state, the processor is configured to send the command via the IR blaster to change the channel state to the particular channel state, without changing the set of codes used to send the command.”

With respect to Claim 28, Williams at least does not disclose “an IR blaster capable to use a set of codes to send a command via an IR beam to the set top box” and “a processor ...configured to receive the feedback signal from the feedback interface, and if the channel state does not match the desired channel state, the processor is further configured to cause the IR blaster to send the command to change the channel state to the desired channel state, without changing the set of codes used to send the command.”

With respect to Claim 29, Williams at least does not disclose “sending a command from an IR blaster to a set top box” and “determining from the one or more feedback signals whether the command from the IR blaster was executed by the set top box, and if the command was not

executed by the set top box, then resending the command from the IR blaster without changing the one or more codes used to configure the command.”

Lastly, with respect to Claim 30, Williams at least does not disclose “repeating the steps of detecting the channel state of the set top box, generating the signal information indicative of the channel state, and transmitting the generated signal information to the companion box to determine a current channel state of the set top box; comparing the current channel state to the initial channel state; and sending a command to the set top box to change to the initial channel state if the current channel state is determined to be different than the initial channel state.” Neither Williams nor the other cited art teach anything about determining an initial channel state and sending a command to change the set top box to the initial channel state if the current channel state is different.

For the above reasons, applicants request reconsideration and allowance of Claims 27-30. Claims 31-34 are also patentable over the cited art for their dependence on Claim 30 and for the additional subject matter they recite.

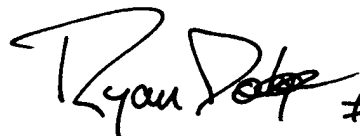
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CONCLUSION

Applicants submit that the claims in the present application are in allowable condition and request a notice to that effect at an early date. Should the Examiner identify any issues needing resolution prior to allowance of the application, the Examiner is invited to directly contact the undersigned counsel by telephone.

Respectfully submitted,

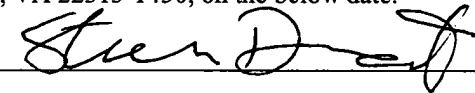
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